

WHAT IS CLAIMED IS:

1. A non-reciprocal circuit element in which a common electrode is disposed on one surface of a plate-like magnetic material, three central conductors protruding in respective directions from the periphery of the common electrode are folded over the other surface of the plate-like magnetic material so as to wrap around the plate-like magnetic material, and the central conductors cross each other at a predetermined angle on the other surface of the plate-like magnetic material, wherein

one of the central conductors that functions as an input is disposed in a position closer to the other surface of the plate-like magnetic material as compared with the other central conductors and directly contacts the plate-like magnetic material.

2. A non-reciprocal circuit element according to Claim 1, wherein the central conductor functioning as the input closely contacts the other surface of the plate-like magnetic material.

3. A non-reciprocal circuit element according to Claim 1, wherein the plate-like magnetic material, the common electrode, and the central conductors are contained in a hollow yoke of an approximately rectangular parallelepiped made of soft magnetic materials, and at least two sides defining the hollow yoke are each 4 mm or less.

4. A non-reciprocal circuit element according to Claim 1, wherein one of the central conductors that functions as an output is disposed on the central conductor functioning as the input on the other surface of the plate-like magnetic material.

5. A non-reciprocal circuit element according to Claim 1, wherein a length of an overlap portion of the central conductor functioning as the input and the central conductor functioning as the output in an intersection of the central conductor functioning as the input and the central conductor functioning as the output is 10% or more of a length of portions of the central conductors disposed on the other surface of the plate-like magnetic material.

6. A non-reciprocal circuit element according to Claim 1, wherein the central conductor functioning as the input and the central conductor functioning as the output are connected to a matching capacitor and the other central conductor is connected to a matching capacitor and a terminating resistor.

7. A communication apparatus comprising:  
the non-reciprocal circuit element as set forth in Claim 1;

a transmitting circuit part connected to the central conductor functioning as the input of the non-reciprocal circuit element; and

an antenna connected to the central conductor  
functioning as the output of the non-reciprocal circuit  
element.

5        8. A communication apparatus comprising:  
the non-reciprocal circuit element as set forth in Claim  
2;

a transmitting circuit part connected to the central  
conductor functioning as the input of the non-reciprocal  
10 circuit element; and

an antenna connected to the central conductor  
functioning as the output of the non-reciprocal circuit  
element.

15        9. A communication apparatus comprising:  
the non-reciprocal circuit element as set forth in Claim  
3;

a transmitting circuit part connected to the central  
conductor functioning as the input of the non-reciprocal  
20 circuit element; and

an antenna connected to the central conductor  
functioning as the output of the non-reciprocal circuit  
element.

25        10. A communication apparatus comprising:  
the non-reciprocal circuit element as set forth in Claim  
4;

a transmitting circuit part connected to the central

conductor functioning as the input of the non-reciprocal circuit element; and

an antenna connected to the central conductor functioning as the output of the non-reciprocal circuit  
5 element.

11. A communication apparatus comprising:

the non-reciprocal circuit element as set forth in Claim  
5;

10 a transmitting circuit part connected to the central conductor functioning as the input of the non-reciprocal circuit element; and

an antenna connected to the central conductor functioning as the output of the non-reciprocal circuit  
15 element.

12. A communication apparatus comprising:

the non-reciprocal circuit element as set forth in Claim  
6;

20 a transmitting circuit part connected to the central conductor functioning as the input of the non-reciprocal circuit element; and

an antenna connected to the central conductor functioning as the output of the non-reciprocal circuit  
25 element.